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the nation, the writer believes this represents a step in the right direction for the preparation of teachers for the junior high school and the small high school.

DISCUSSIONS.

The two short discussions seem to require no comment. We should be glad if Question 45, printed above, which is called forth by Professor Bradley's discussion of the Diophantine equation $t^3 = x^3 + y^3 + 1$, should receive some interesting replies. Mr. Roman's note on a humble phase of the mathematics of investment should be entertaining.

I. ON A DIOPHANTINE EQUATION.¹

By H. C. BRADLEY, Massachusetts Institute of Technology.

On page 77 of the February number of the MONTHLY, Professor R. D. Carmichael asks, among other things, for a general solution of the Diophantine equation $t^3 = x^3 + y^3 + 1$.

I wrote to Professor Carmichael, calling attention to the following. In his own *Diophantine Analysis*, p. 65, he gives a general solution of $x^3 + y^3 = u^3 + v^3$ as follows:

$$\begin{aligned} x &= -(a - 3b)(a^2 + 3b^2) + 1, & y &= (a + 3b)(a^2 + 3b^2) - 1, \\ u &= -(a^2 + 3b^2)^2 + (a + 3b), & v &= (a^2 + 3b^2)^2 - (a - 3b). \end{aligned}$$

Now let $a = 3b$, then let $2b = r$, and change the variables, and we have

$$x = 9r^4 - 3r, \quad y = 9r^3 - 1, \quad t = 9r^4;$$

which is a solution of $t^3 = x^3 + y^3 + 1$.

Or, if we assume the possibility of a solution of the form $x = Ar^4 - Br$, $y = Cr^3 - 1$, $t = Ar^4 + Dr$, the coefficients may be determined as above.

This solution gives $9^3 = 6^3 + 8^3 + 1$, $144^3 = 138^3 + 71^3 + 1$, $729^3 = 720^3 + 242^3 + 1$, etc. It fails to include the trivial case $x = y = 0$, $t = 1$.

Professor Carmichael replied that this was interesting, but asked if I could prove that it gave all non-trivial integral solutions of the given equation. This I cannot do. So at his suggestion I am sending the result, thinking that perhaps some other readers of the MONTHLY might be interested to work on it.

II. A NOTE ON WAR SAVINGS STAMPS.

By IRWIN ROMAN, Northwestern University.

The accompanying table illustrates an interesting property of the War Savings Stamps issued by the government in 1918. A similar table holds for later issues. The third column gives the amount which the post-office will pay for each five dollar stamp during the month. If we consider this amount as reinvested, the fourth column gives the profit accrued at maturity, while the fifth column gives the per cent. this profit is of the amount thus reinvested. The final column shows the annual rate of interest corresponding to the case.

¹ Extract from a letter to the Editor.